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NOTICE OF ALLOWANCE AND FEE(S) DUE

23413

7590

08/28/2008

CANTOR COLBURN, LLP
20 Church Street
22nd Floor
Hartford, CT 06103

EXAMINER

THANGAVELU, KANDASAMY

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 08/28/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,925	03/22/2004	Diane M. Landers	DP-310838	2044

TITLE OF INVENTION: HORIZONTALLY STRUCTURED CAD/CAM MODELING-VERTICAL TO HORIZONTAL CONVERSION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	11/28/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

23413 7590 08/28/2008
CANTOR COLBURN, LLP
20 Church Street
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Hartford, CT 06103

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$1440	\$300	\$0	\$1740	11/28/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
THANGAVELU, KANDASAMY	2123	703-002000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
 Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 527 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 527 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/805,925

Examiner

KANDASAMY THANGAVELU

Applicant(s)

LANDERS ET AL.

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to May 8, 2008.
2. ☒ The allowed claim(s) is/are 1,2,4-8,11,17-22,24-28,30-34,41,42,44 and 45.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 7/19/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other Clean Copy of Allowed Claims.

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' communication dated May 8, 2008. Claims 1-7, 15, 21-24, 26-28, 30, 39 and 45 were amended. Claims 9-10, 12-14, 16, 29, 35-38, 40, 43 and 46 were canceled. Claims 1-8, 11, 15, 17-28, 30-34, 39, 41-42 and 44-45 of the application are pending.

Examiner's Amendment

2. Authorization for this examiner's amendment was given in a telephone conversation by Mr. Brad Lawrence on July 31, 2008.

An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. In claim 1, Lines 25-26, "deleting the dependency between the parent coordinate system and the new reference feature"

has been changed to

-- deleting the dependency between the modeling feature and the existing datum plane --.

In claim 1, Lines 31-35, “deleting the dependency between the parent coordinate system and the reference feature; and

restructuring each dependency for each said modeling feature for placement with respect to the horizontal model, such that each said modeling feature exhibits an associative relationship with another reference feature”

has been changed to

-- deleting the dependency between the modeling feature and the existing datum plane --.

In claim 2, Line 8, “said first datum”

has been changed to

-- said first datum plane --.

Cancel claim 3.

In claim 5, Line 2, “primitive to a feature”

has been changed to

-- primitive to a modeling feature --.

In claim 6, Lines 1-2, “said converting includes establishing a new feature corresponding to said primitive element”

has been changed to

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-- said converting said primitive includes establishing a new feature corresponding to said primitive --.

In claim 11, Line 4, "such that positioning and placement"

has been changed to

-- such that placement --.

Cancel claim 15.

In claim 19, Line 2, "said coordinate system"

has been changed to

-- said parent coordinate system --.

In claim 20, Lines 1-2 and 3, "said coordinate system"

has been changed to

-- said parent coordinate system --.

In claim 21, Lines 29-30, "deleting the dependency between the parent coordinate system and the new reference feature"

has been changed to

-- deleting the dependency between the modeling feature and the existing datum plane --.

In claim 21, Lines 35-39, “deleting the dependency between the parent coordinate system and the reference feature; and

restructuring each dependency for each said modeling feature for placement with respect to the horizontal model, such that each said modeling feature exhibits an associative relationship with another reference feature”

has been changed to

-- deleting the dependency between the modeling feature and the existing datum plane --.

Cancel claim 23.

In claim 28, Lines 2-3, “said primitive element to the feature corresponding to said primitive element”

has been changed to

-- said primitive to a modeling feature corresponding to said primitive --.

In claim 32, Line 5, “a third datum”

has been changed to

-- a third datum plane --.

In claim 34, Line 2, “said coordinate system”

has been changed to

-- said parent coordinate system --.

Cancel claim 39.

In claim 44, Lines 1-2 and 3, "said coordinate system"

has been changed to

-- said parent coordinate system --.

In claim 45, Lines 27-28, "deleting the dependency between the parent coordinate system and the new reference feature"

has been changed to

-- deleting the dependency between the modeling feature and the existing datum plane --.

In claim 45, Lines 33-37, "deleting the dependency between the parent coordinate system and the reference feature; and

restructuring each dependency for each said modeling feature for placement with respect to the horizontal model, such that each said modeling feature exhibits an associative relationship with another reference feature"

has been changed to

-- deleting the dependency between the modeling feature and the existing datum plane --.

A clean copy of allowed claims is attached.

Reasons for Allowance

4. Claims 1-2, 4-8, 11, 17-22, 24-28, 30-34, 41-42 and 44-45 of the application are allowed over prior art of record.

5. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a method of horizontally structured automated CAD/CAM manufacturing process; establishing a coordinate system; the manufacturing feature exhibiting an associative relationship with the coordinate system; capturing manufacturing process rules in a spread sheet; the spreadsheet exhibiting an associative relationship with a master process model; a machine readable computer program code for horizontally structured automated CAD/CAM manufacturing process; a horizontal method of CAD/CAM modeling is superior to vertical methods in which physical features are added to the model in associative relationship with other features; the horizontal model may be implemented in a CAD/CAM package that supports reference planes, parametric modeling and feature modeling; datum planes are reference features that define Cartesian coordinate system; in feature modeling, features are linked such that changes to one feature may alter others with which it is associated; in a horizontal model, features are added to a model, establishing apparent/child relationship between a set of reference planes and the feature; in the horizontal model a change in one feature is independent of changes to other features (**Landers et al.**, U.S. Patent Application 2002/0152000);

(2) a method of modeling, machining and inspecting complex three dimensional parts and tool paths through a workpiece; virtual machining of the workpiece integrated with virtual inspection of the virtually machined part; employing horizontally structured modeling and manufacturing techniques; the horizontally structured modeling techniques permit changes in one feature to be independent of remaining features; the horizontal modeling may be implemented in a CAD/CAM package providing reference planes, parametric modeling and feature modeling; for horizontal modeling a series of datum planes are created and used as reference planes; three dimensional solid model is partitioned into a series of two dimensional slices; the slices are then swept along a defined tool path and through the virtual workpiece; with the passing of each slice, the material that the slice intersects with the workpiece is subtracted; virtual inspection is accomplished through a series of master planes, positioning planes and cutting planes; positioning planes are offset and rotated from the master planes to provide the positioning of the cutting planes (**Thomas et al.**, U.S. Patent Application 2003/0204285); and

(3) a method of horizontally structured CAD/CAM modeling; establishing a coordinate system; adding a base feature; adding a form feature, where the form feature exhibits an associative relationship with the coordinate system; the horizontal method of CAD/CAM is superior to the vertical method, since in the horizontal method, the changes to one feature does not affect other features; horizontal modeling can be implemented in any CAD/CAM package that provide reference planes and feature modeling; the horizontal model establishes parent/child relationship between a feature and a set of reference planes; the reference planes are also known as datum planes; a plurality of datum planes are used to define a coordinate system; the coordinate system may be constructed relative to a model and may move and rotate with the model;

numerous features may be referenced to the same coordinate system; a second coordinate system may be created as a child of a first coordinate reference; horizontal modeling reduces the time required to develop a model by a factor of two and time required to make changes to the model by a factor of ten compared to vertical models (**Landers et al.**, U.S. Patent Application 2002/0133803).

None of these references taken either alone or in combination with the prior art of record discloses a method for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model, specifically including:

(Claim 1) “restructuring each dependency for each said modeling feature for placement with respect to the horizontally structured CAD/CAM model, such that each said modeling feature exhibits a direct associative relationship with a reference feature, said restructuring including;

determining if said modeling feature is dependent on an existing datum plane for placement;

for modeling features determined to be dependent on an existing datum plane for placement, performing at least one of:

configuring a new reference feature for placement of said modeling feature wherein said new reference feature is dependent on said parent coordinate system and establishing an associative relationship between said modeling feature and said new reference feature, then deleting the dependency between the modeling feature and the existing datum plane,

reconfiguring said existing datum plane as a descendant of said parent coordinate system,
and

establishing an associative relationship with at least one of said parent coordinate system
and a reference feature dependent therefrom and deleting the dependency between the modeling
feature and the existing datum plane” in combination with the remaining elements and features
of the claimed invention.

None of these references taken either alone or in combination with the prior art of record
discloses a system for converting a vertically structured CAD/CAM model to a horizontally
structured CAD/CAM model, specifically including:

(Claim 21) “restructuring each dependency for each said modeling feature for placement
with respect to the horizontally structured CAD/CAM model, such that each said modeling
feature exhibits a direct associative relationship with a reference feature, said restructuring
including;

determining if said modeling feature is dependent on an existing datum plane for
placement;

for modeling features determined to be dependent on an existing datum plane for
placement, performing at least one of:

configuring a new reference feature for placement of said modeling feature wherein said
new reference feature is dependent on said parent coordinate system and establishing an
associative relationship between said modeling feature and said new reference feature, then
deleting the dependency between the modeling feature and the existing datum plane,

reconfiguring said existing datum plane as a descendant of said parent coordinate system,
and

establishing an associative relationship with at least one of said parent coordinate system
and a reference feature dependent therefrom and deleting the dependency between the modeling
feature and the existing datum plane” in combination with the remaining elements and features
of the claimed invention.

None of these references taken either alone or in combination with the prior art of record
discloses a storage medium encoded with a machine-readable computer program code, wherein
said storage medium includes instructions for causing a computer to implement a method for
converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM
model, specifically including:

(Claim 45) “restructuring each dependency for each said modeling feature for placement
with respect to the horizontally structured CAD/CAM model, such that each said modeling
feature exhibits a direct associative relationship with a reference feature, said restructuring
including;

determining if said modeling feature is dependent on an existing datum plane for
placement;

for modeling features determined to be dependent on an existing datum plane for
placement, performing at least one of:

configuring a new reference feature for placement of said modeling feature wherein said
new reference feature is dependent on said parent coordinate system and establishing an

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associative relationship between said modeling feature and said new reference feature, then deleting the dependency between the modeling feature and the existing datum plane,

reconfiguring said existing datum plane as a descendant of said parent coordinate system, and

establishing an associative relationship with at least one of said parent coordinate system and a reference feature dependent therefrom and deleting the dependency between the modeling feature and the existing datum plane" in combination with the remaining elements and features of the claimed invention.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kandasamy Thangavelu/
Examiner, Art Unit 2123
July 31, 2008